The information presented here reflects EPA's modeling of the Clear Skies Act of 2002. The Agency is in the process of updating this information to reflect modifications included in the Clear Skies Act of 2003. The revised information will be posted on the Agency's Clear Skies Web site (www.epa.gov/clearskies) as soon as possible.

CLEAR SKIES IN IOWA[1]

Human Health and Environmental Benefits of Clear Skies: Clear Skies would protect human health, improve air quality, and reduce deposition of sulfur dioxide (SO_2), nitrogen oxides (NO_x), and mercury.[2]

- Beginning in 2020, approximately $1 billion of the annual benefits of Clear Skies would occur in Iowa. Every year, these would include:
  - over 100 fewer premature deaths;
  - approximately 100 fewer cases of chronic bronchitis;
  - over 4,000 fewer days with asthma attacks,
  - over 100 fewer hospitalizations and emergency room visits;
  - over 18,000 fewer days of work lost due to respiratory symptoms; and
  - over 140,000 fewer total days with respiratory-related symptoms.

Clear Skies Benefits Nationwide

- In 2020, annual health benefits from reductions in ozone and fine particles would total $93 billion, including 12,000 fewer premature deaths, far outweighing the $6.49 billion cost of the Clear Skies program.
- Using an alternative methodology results in over 7,000 premature deaths prevented and $11 billion in benefits by 2020—still exceeding the cost of the program.[3]
- Clear Skies would provide an additional $3 billion in benefits due to improved visibility in National Parks and wilderness areas in 2020.

- There are no counties in Iowa currently projected to be out of attainment with the annual fine particle or the 8-hour ozone standards. Clear Skies would, however, achieve additional reductions in fine particles and ozone that would further protect human health.[4]

- Clear Skies delivers numerous environmental benefits by 2020:
  - visibility would improve 1-2 deciviews throughout Iowa (a change of 1 deciview is a perceptible change in visibility);
  - sulfur deposition would decrease by 15-30% throughout much of the state and by up to 15% in central portions of the state; and
  - nitrogen deposition would be reduced by 15-30% throughout the state.

[1] The projected impacts are the results of extensive emissions and regional air quality modeling and benefits analyses as summarized in the *Technical Addendum: Methodologies for Benefit Analysis of the Clear Skies Initiative, 2002*. While the policy analyses tools EPA used are among the best available, all such national scale policy assessments are subject to a number of uncertainties, particularly when projecting air quality or environmental impacts in particular locations.

[2] All human health and environmental benefits are calculated in comparison to existing Clean Air Act programs.

[3] The two sets of estimates reflect alternative assumptions and analytical approaches regarding quantifying and evaluating the effects of airborne particles on public health. All estimates assume that particles are causally associated with health effects, and that all components have the same toxicity. Linear concentration-response relationships between PM and all health effects are assumed, indicating that reductions in PM have the same impact on health outcomes regardless of the absolute level of PM in a given location. The base estimate relies on estimates of the potential cumulative effect of long-term exposure to particles, while the alternative estimate presumes that PM effects are limited to those that accumulate over much shorter time periods. All such estimates are subject to a number of assumptions and uncertainties. It is of note that, based on recent preliminary findings from the Health Effects Institute, the magnitude of mortality from short-term exposure (alternative estimates) and hospital/ER admissions estimates (both estimates) may be overstated. The alternatives also use different approaches to value health effects damages. The key assumptions, uncertainties, and valuation methodologies underlying the approaches used to produce these results are detailed in the *Technical Addendum* noted above.

Changes in Emissions Under Clear Skies: Clear Skies is projected to result in significant emissions reductions from power generators by 2020.

- In Iowa, Clear Skies is projected to significantly reduce emissions from power generators by 2020 (relative to 2000 emissions):
  - SO_2 emissions would be reduced by 36%;
  - NO_x emissions would be reduced by 74%; and,
  - mercury emissions would be reduced by 38%.

Nationwide Emissions under Clear Skies in 2020

- SO_2 emissions from power generators are projected to be 3.9 million tons (a 65% reduction from 2000 levels).
- NO_x emissions are projected to be 1.7 million tons (a 67% reduction from 2000 levels).
- Mercury emissions are projected to be 18 tons (a 63% reduction from 2000 levels).
- At full implementation, the emission reductions would be 73% for SO_2, 67% for NO_x, and 69% for mercury.

Figures 1a, 1b and 1c. *Existing Clean Air Act Regulations (base case[5]) vs. Clear Skies in Iowa in 2010 and 2020*

Figure 1a. SO_2

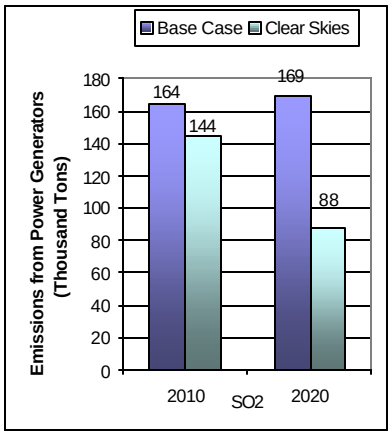


Figure 1b. NO_x

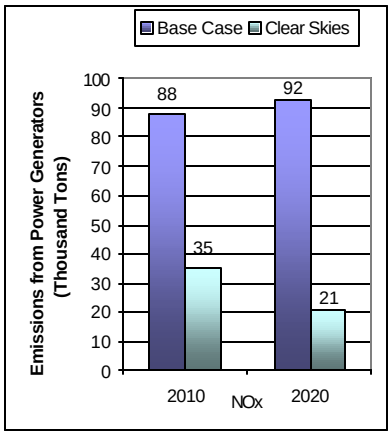
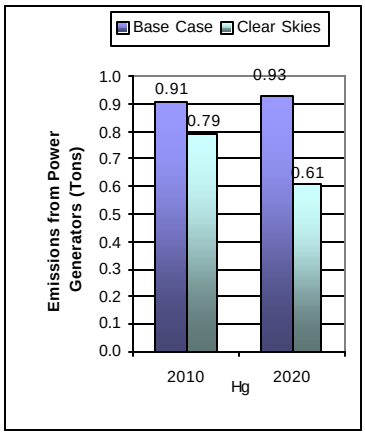


Figure 1c. Mercury



- Emissions rates in Iowa in 2010 and 2020:

Table 1. *Projected Emissions Rates in 2010 and 2020 in Iowa*

Year		SO_2	NO_x			Hg
		Coal	All	Coal	Gas	Coal
		lbs/MMBtu	lbs/MMBtu	lbs/MMBtu	lbs/MMBtu	lbs/TBtu
2010	Base Case	0.83	0.41	0.44	0.10	4.59
	Clear Skies	0.82	0.19	0.20	0.04	4.53
2020	Base Case	0.83	0.39	0.44	0.10	4.58
	Clear Skies	0.53	0.11	0.12	0.03	3.69

Costs: Nationwide, the projected annual costs of Clear Skies (in $1999) are $3.69 billion in 2010 and $6.49 billion in 2020.[6]

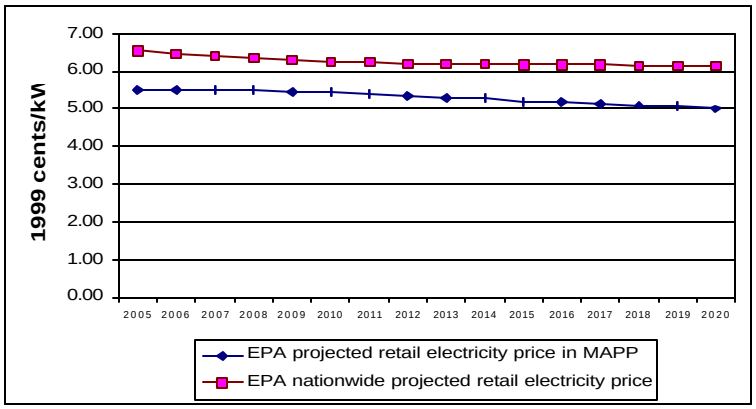
[5] The base case includes Title IV, the NO_x SIP call and State-specific caps in CT, MO and TX. It does not include mercury MACT in 2008 or any other potential future regulations to implement the current Clean Air Act.

[6] EPA uses the Integrated Planning Model (IPM) to project the economic impact of Clear Skies on the power generation sector. IPM disaggregates the power generation sector into specific regions based on properties of the electric transmission system, power market fundamentals, and regional environmental regulations. These regions do not conform to State or EPA region boundaries making some compliance options, such as dispatch, and associated costs impractical to differentiate at a State or Regional level.

Changes in Projected Retail Electricity Prices Under Clear Skies: Electricity prices in Iowa would not be significanlty affected by Clear Skies.

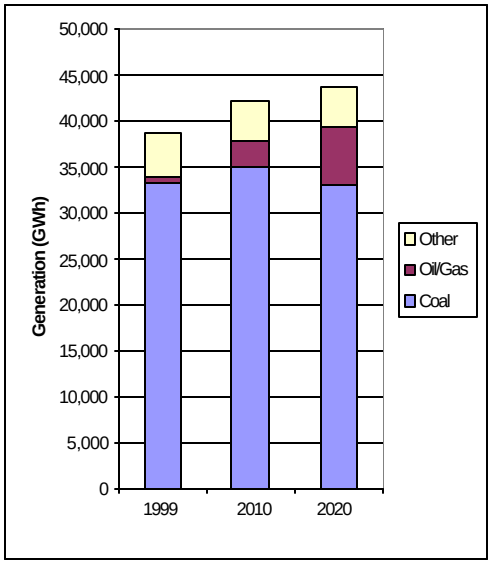
- In 1999, the average retail electricity price in Iowa was approximately 5.93 cents/kWh, which was below the average *national* retail price of approximately 6.66 cents/kWh.[7] As shown in Figure 3, retail prices in MAPP (the North American Electric Reliability Council (NERC) regions that contains Iowa[8]) are projected to decrease and remain below the national average between 2005 and 2020.[9]

***Figure 2**. Projected Retail Electricity Prices in MAPP under Clear Skies (2005-2020)*



Generation in Iowa Under Clear Skies: Coal-fired power plants currently produce 85% of the electricity generated in Iowa. Although coal-fired generation would remain relatively unchanged under Clear Skies, the portion of total generation from coal-fired plants is projected to slightly decrease. In Iowa, coal-fired generation would decrease under Clear Skies to approximately 83% in 2010, and 75% in 2020.

***Figure 3**. Current and Projected Generation by Fuel Type in Iowa under Clear Skies (GWh)*[10]



[7] Source: EIA at http://www.eia.doe.gov/cneaf/electricity/page/fact_sheets/retailprice.html
[8] Iowa falls under NERC regions MAPP and MAIN. The region shown in the graph represents the larger capacity share of the state.
[9] State-level retail electricity prices vary considerably across the United States. Variation in prices can be caused by many factors including access to low cost fuels for generating power, State taxes, and the mix of power plants in the States.
[10] Source: 1999 data from EIA at http://www.eia.doe.gov/cneaf/electricity/st_profiles/iowa/ia.html (Table 5).

- EPA does not project that any facilities in Iowa would switch from coal to natural gas in response to the Clear Skies emissions caps. Instead, sources in Iowa would reduce their emissions through the installation of control technologies.

  - By 2010, coal-fired capacity in Iowa is projected to be approximately 5,200 MW under Clear Skies. Approximately 2,300 MW of Iowa's coal capacity are projected to install Selective Catalytic.

  - Between 2010 and 2020, an additional 1,100 MW are projected to install SCR and 1,300 MW are projected to install scrubbers.

- 50% of Iowa's coal-fired generation is projected to come from coal units with emission control equipment in 2010, and 75% in 2020.[11]

Coal Production in Iowa: Iowa did not produce coal in 2000 and is not projected to produce coal under Clear Skies.

Major Generation Companies in Iowa: The ten largest plants in the State -- each over 200 MW -- are a combination of nuclear, petroleum, gas and coal-fired plants. The major generation companies include: MidAmerican Energy Company, IES Utilities, Inc., Interstate Power Company, Muscatine Power and Water, and Eastern Iowa Light & Power Coop.

[11] Emissions control equipment includes, where applicable, scrubbers, selective catalytic reduction, selective non-catalytic reduction, gas-reburn and activated carbon injection.